

Maria Mercedes Arredondo

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I am a developmental cognitive neuroscientist investigating infant and child language and cognitive development, and how early bilingual experiences impact cognition and academic development. To pursue my research, I use both behavioral and neuroimaging (fNIRS, fMRI) methods. NSF and other national and institutional funding agencies have funded my research. I have presented my work at national/international conferences, and published in top journals including *Child Development*, *Developmental Science*, and *Human Brain Mapping*.

EDUCATION

- 2017** **Ph.D. Developmental Psychology, University of Michigan**
Dissertation: A bilingual advantage? The functional organization of linguistic competition and attentional networks in the developing bilingual brain
Chairs: Ioulia Kovelman, Susan Gelman
- 2013** **M.S. Psychology, University of Michigan**
Thesis: Neural bases of metalinguistic awareness and literacy acquisition: Moving beyond phonological awareness
Advisor: Ioulia Kovelman
- 2010** **B.S. Psychology, minor in Sociology, University of Houston**
Magna Cum Laude with honors
Honors Thesis: The bilingual cognitive advantage: Culture and socio-economic status on executive function.
Advisor: Hanako Yoshida
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ACADEMIC POSITIONS

- 2017** **Postdoctoral Research Associate, University of British Columbia**
Infant Studies Centre, Advisor: Janet Werker
-

GRANTS & FELLOWSHIPS

- 2012-2017** National Science Foundation Graduate Research Fellowship (NSF GRFP); \$134,000
University of Michigan Rackham Graduate School Merit Fellow (RMF)
University of Michigan Rackham Conference Travel Grant; \$4,000
- 2016** University of Michigan Rackham Predoctoral Fellowship; \$32,000, tuition, healthcare
American Association of University Women (AAUW) Dissertation Fellowship
Ford Foundation Dissertation Fellowship; Honorable Mention
University of Michigan Dept. of Psychology Dissertation Grant; \$1,000

- 2015** University of Michigan Rackham Graduate Student Research Grant; \$3,000
2014 University of Michigan Rackham Spring/Summer 2014 Research Grant; \$9,500
2012 University of Michigan Rackham Graduate Student Research Grant; \$1,500
2011-2012 National Institute of Child Health and Development (NICHD) Pre-Doctoral Fellowship
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AWARDS & HONORS

- 2017** Cognitive Development Society Diversity Travel Award; \$550
Participant, NYU-Steinhardt Faculty First-Look workshop
2016 University of Michigan Hagen-Stevenson Dissertation Research Award; \$1,200
2015 Cognitive Development Society Diversity Travel Award; \$500
2014 Journal of Cognitive Neuropsychology Student Travel Award; \$750
University of Michigan Rackham International Research Award; \$5,500
University of Michigan Pat Gurin Distinguished Lecture; \$200
Participant, Summer School on Language at the Basque Center on Cognition, Brain and
Language—European Society for Cognitive Psychology (ESCOPE)
2013 University of Michigan Barbara A. Oleshansky Memorial Fund; \$5,400
Inter-University Consortium for Political and Social Research (ICPSR) training award
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PUBLICATIONS

Tran, C. D., **Arredondo, M. M.**, & Yoshida, H. (accepted). Culture and bilingualism have distinct influences on the development of cognitive control. *Bilingualism: Language and Cognition*.

Arredondo, M. M. & Gelman, S. A. (2017, early view). Do varieties of Spanish influence U.S. Spanish-English bilingual children's friendship judgments? *Child Development*. Doi: [10.1111/cdev.12932](https://doi.org/10.1111/cdev.12932)

Arredondo, M. M., Hu, X., Satterfield, T., & Kovelman, I. (2017) Bilingualism alters children's frontal lobe functioning for attentional control. *Developmental Science*. Doi: [10.1111/desc.12377](https://doi.org/10.1111/desc.12377)

Ip, K. I., Hsu, L. S., **Arredondo, M. M.**, Tardif, T., & Kovelman, I. (2016). Simultaneous acquisition of English and Chinese impacts children's reliance on vocabulary and phonological awareness for reading in English. *International Journal of Bilingual Education and Bilingualism*. Doi: [10.1080/13670050.2016.1246515](https://doi.org/10.1080/13670050.2016.1246515)

Arredondo, M. M., Rosado, M. & Satterfield, T. (2016). Understanding ethnic identity development and its impact on Spanish literacy for U.S. Latino children. *Journal of Cognition and Culture*, 16, 245-266. Doi: [10.1163/15685373-12342179](https://doi.org/10.1163/15685373-12342179)

Kremin*, L., **Arredondo***, M. M., Hsu, L. S., Satterfield, T., & Kovelman, I. (2016). The effects of Spanish heritage language literacy on English reading for Spanish-English bilingual children in the U.S. *International Journal of Bilingual Education and Bilingualism*. Doi: [10.1080/13670050.2016.1239692](https://doi.org/10.1080/13670050.2016.1239692) *Shared first-authorship

Ip, K., Hsu, L. S., **Arredondo, M. M.**, Tardif, T., & Kovelman, I. (2016). Brain bases of morphological processing for learning to read in Chinese-English bilingual children. *Developmental Science*. Doi: [10.1111/desc.12449](https://doi.org/10.1111/desc.12449)

Ugolini, M., Wagley, N., Ip, K. I., Hsu, L. S., **Arredondo, M. M.**, & Kovelman, I. (2016). In young readers left hemisphere supports the link between temporal processing and phonological awareness. *Speech, Language, and Hearing Research*, 19, 17-26. Doi: [10.1080/2050571.X.2015.1101894](https://doi.org/10.1080/2050571.X.2015.1101894)

Arredondo, M. M., Ip, K. I., Hsu, L. S., Tardif, T., & Kovelman, I. (2015). Brain bases of morphological processing in young children. *Human Brain Mapping*, 36, 2890-2900. Doi: [10.1002/hbm.22815](https://doi.org/10.1002/hbm.22815)

Hu, X., **Arredondo, M. M.**, Gomba, M., Confer, N., DaSilva, A., Johnson, T., Shalinsky, M., & Kovelman, I. (2015). A comparison of motion correction techniques applied to functional near-infrared spectroscopy data from children. *Journal of Biomedical Optics*, 20. Doi: [10.1117/1.JBO.20.12.126003](https://doi.org/10.1117/1.JBO.20.12.126003)

Tran, C. D., **Arredondo, M. M.**, & Yoshida, H. (2015). Differential effects of bilingualism and culture on early attention: A longitudinal study in the U.S., Argentina, and Vietnam. *Frontiers in Psychology: Language Sciences*. Doi: [10.3389/fpsyg.2015.00795](https://doi.org/10.3389/fpsyg.2015.00795)

MANUSCRIPTS UNDER REVIEW

Arredondo, M. M., Seifert, E., Hu, X., Satterfield, T., & Kovelman, I. (revise & resubmit). Bilingual exposure enhances left IFG specialization for language in children.

Weissman, D. H., **Arredondo, M. M.**, Ismailova, I., & Kovelman, I. (under review). Young and distracted: Interference control processes are less effective in young children than in young adults.

Reh, R., **Arredondo, M. M.**, & Werker, J. (under review). Understanding individual variation in levels of second language attainment through the lens of critical period mechanisms.

MANUSCRIPTS IN PREPARATION

Arredondo, M. M., Hu, X., & Kovelman, I. (in prep). Are two better than one? Language competition in the developing brain.

Arredondo, M. M., Hu, X., & Kovelman, I. (in prep). The functional organization and connectivity of attentional networks in the bilingual developing brain.

Arredondo, M. M., Hu, X., Stojanov, L. & Kovelman, I. (in prep). Overlapping linguistic and attention systems in the bilingual brain.

CONFERENCE PRESENTATIONS

Talks

Arredondo, M. M., & Kovelman, I. (June 2017). Bilingual and monolingual brains compared: syntactic processing in children and adults. International Symposium on Bilingualism (ISB), Limerick, Ireland.

Arredondo, M. M., Hu, X. & Kovelman, I. (September 2016). Bilingualism alters attentional networks in the brain. International Mind, Brain and Education Society (IMBES) Annual Conference, Toronto, Canada.

Arredondo, M. M., Hu, X., Satterfield, T., & Kovelman, I. (July 2014). Brain bases of attention in bilingual children and its effect on reading acquisition: An fNIRS study. Society for the Scientific Study of Reading (SSSR) 2014 Annual Conference, Santa Fe, NM.

Arredondo, M. M., Ip, K. I., Hsu, L. S., & Kovelman, I. (July 2014). Neural bases of morphological awareness and literacy acquisition: moving beyond phonological awareness. Society for the Scientific Study of Reading (SSSR) 2014 Annual Conference, Santa Fe, NM.

Arredondo, M. M., Ip, K. I., Hsu, L. S., & Kovelman, I. (April 2013). Neural bases of metalinguistic awareness and early reading acquisition: Moving beyond phonological processing. Society for Research in Child Development (SRCD) 2013 Biennial Conference, Seattle, WA.

Poster Presentations

Arredondo, M. M., Hu, X., & Kovelman, I. (October, 2017). Bilingual children are more efficient when processing linguistic competitors. Cognitive Development Society (CDS) Biennial Meeting, Portland, OR.

Arredondo, M. M., Hu, X., Tsutsumi, A., Stojanov, L, Wlock, R., Peppard, D., & Kovelman, I. (April 2017). Bilingual children show left-hemisphere brain activation for attentional networks. Society for Research in Child Development (SRCD) 2017 Biennial Conference, Austin, TX.

Arredondo, M. M., Hu, X., Stojanov, L., Tsutsumi, A., Wlock, R., & Kovelman, I. (October 2016). Bilingual children show left-hemisphere activation during non-verbal attentional networks. The Society for Functional Near Infrared Spectroscopy (SfNIRS) 2016 Biennial Conference, Paris, France.

Satterfield, T., Arredondo, M. M., & Rosado, M. (August 2016). Understanding the impact of heritage language on ethnic identity formation and literacy for U.S. Latino children. European Early Childhood Education Research Association (EECERA) 2016 Annual Conference, Dublin, Ireland.

Hu, X., Arredondo, M. M., Gomba, M., Confer, N., DaSilva, A. F., Shalinsky, M., & Kovelman, I. (October 2015). A comparison of motion correction techniques applied to functional near-infrared spectroscopy data from children. Society for Neuroscience (SfN) 45th Annual Conference, Chicago, IL.

Arredondo, M. M., Rosado, M., & Gelman, S. A. (October 2015). A developmental study on how varieties of Spanish influence U.S. Latino children's friendship judgments. Cognitive Development Society (CDS) Biennial Meeting, Columbus, OH.

Arredondo, M. M., Fuentes, C., Rosado, M., & Gelman, S. A. (March 2015). Do varieties of Spanish influence U.S. Latino children's friendship judgments? Society for Research in Child Development (SRCD) 2015 Biennial Conference, Philadelphia, PA.

Arredondo, M. M., Rosado, M., & Satterfield, T. (March 2015). Ethnic identity formation among U.S. Latino children ages 6-12: why heritage language learning matters. Society for Research in Child Development (SRCD) 2015 Biennial Conference, Philadelphia, PA.

Arredondo, M. M., Hu, X., Delgado Reyes, L. M., Satterfield, T., & Kovelman, I. (October 2014). Bilingualism alters children's prefrontal activation during a non-verbal attention task. Functional Near Infrared Spectroscopy (fNIRS) 2015 Biennial Conference, Montreal, QC, Canada.

Arredondo, M. M., Hu, X., Delgado Reyes, L. M., Younce, S., Muñoz Velazquez, J., Seifert, E., Satterfield, T., & Kovelman, I. (April 2014). Bilingual children show greater left prefrontal activation during a non-verbal attention task: An fNIRS study. Cognitive Neuroscience Society (CNS) 2014 Annual Conference, Boston, MA.

Seifert, E., Arredondo, M. M., Hu, X., Delgado Reyes, L. M., Satterfield, T., & Kovelman, I. (April 2014). Syntactic processing in bilingual children: examining the optional infinitive stage with fNIRS. Cognitive Neuroscience Society (CNS) 2014 Annual Conference, Boston, MA.

Arredondo, M. M., Gaston, P., Ip, K. I., & Kovelman, I. (October 2012). Location, location, location—Where are we in the brain? Functional Near Infrared Spectroscopy (fNIRS) 2012 Meeting, London, England.

Arredondo, M. M., Satterfield, T., & Kovelman, I. (April 2012). Investigation of Bilingual Language Processing in Latino Spanish-English Minority in the United States. 2nd Biennial APA Division 45 Conference, Ann Arbor, MI.

Arredondo, M. M., Mascho, K., Mastic, A., Ip, K., Hsu, L. S., Spath, S., Wagley, N., Younce, S., Wardin, K., Thierbach, L., & Kovelman, I. (October 2012). Neural bases of metalinguistic awareness and early reading acquisition: Moving beyond phonological processing. Cognitive Neuroscience Society (CNS) 2012 Annual Conference, Chicago, IL.

Ip, K., Hsu, L. S., Chen, J., Arredondo, M. M., Mascho, K., Su, L., Tardif, T., & Kovelman, I. (October 2012). Neural correlates of morphological awareness in bilingual Chinese-English children: An fMRI investigation of cross-linguistic reading acquisition. Cognitive Neuroscience Society (CNS) 2012 Annual Conference, Chicago, IL.

Arredondo, M. M., Tran, D., & Yoshida, H. (April 2011). Social structure and executive function task performances. Society for Research in Child Development (SRCD) 2011 Biennial Conference, Montreal, Canada.

Tran, D., Arredondo, M. M., & Yoshida, H. (2009). Cultural variability in early executive function task performances. Cognitive Development Society (CDS) 6th Biennial Meeting, San Antonio, TX.

Arredondo, M. M., Tran, D., & Yoshida, H. (2009). The bilingual cognitive advantage: Culture and socioeconomic-status on executive function. University of Houston Undergraduate Research Day, Houston, TX.

INVITED & COLLOQUIA TALKS

Arredondo, M. M. (January 2018). Shining a light on the bilingual developing brain. Laboratory for the Neural Bases of Bilingualism, University of Houston, Houston, TX.

Arredondo, M. M. (October 2017). How language, cognition and culture come together in the bilingual mind. University of British Columbia Developmental area meeting, Vancouver, BC.

Arredondo, M. M. (September 2015). Bilingualism alters children's frontal activity during a non-verbal attention task: an fNIRS study. Invited speaker to Fall 2015 Functional MRI Symposium, University of Michigan.

Arredondo, M. M. (January 2014). "Why bilinguals are smarter?" Bilingualism improves children's attention and impacts the developing brain. Pat Gurin Distinguished Lecture Series, University of Michigan, Ann Arbor, MI.

Arredondo, M. M. (October 2013). Neural bases of metalinguistic awareness and early reading acquisition: Moving beyond phonological processing. University of Michigan Developmental Brown Bag, Ann Arbor, MI.

TEACHING AND STUDENT MENTORSHIP

Teaching Experience

2013-2014 Advanced research methods in developmental psychology (Psych 351)
University of Michigan; Professor: E. Margaret Evans

2012-2017 Senior Honors Thesis Research (Psych 424/426)
University of Michigan; Professor: Ioulia Kovelman
Graduate Student Co-Advisor: Maggie Ugolini, Erica Seifert, Lena Kremin, Inara Ismailova and Lara Stojanov.

2011-2017 Faculty Directed Early Research for Psychology (Psych 326)
University of Michigan; Professors: Ioulia Kovelman and Susan Gelman

Teaching Training

2014 Certificate of Training in Graduate Teaching from the Center for Research on Learning and Teaching (CRLT), University of Michigan

2013 Teaching Writing in the Disciplines, University of Michigan. Trained in effective teaching and evaluation in undergraduate writing.
Graduate Student Instructor Training, Center for Research on Learning and Teaching (CRLT), University of Michigan

Guest Lectures

- 2016** Research Methods: Imaging, Experiments, and Questionnaires. Mock Spanish (Spanish 487), Dept. of Romance Languages and Literatures University of Michigan.
- 2015** Cross-cultural research methods. Advanced research methods in developmental psychology (Psych 351), Dept. of Psychology University of Michigan.
- 2013** Language, literacy, and the brain. Project Outreach—Experiential Lab (Psych 211), Dept. of Psychology University of Michigan.
- 2012** Language, literacy, and the brain. Project Outreach—Experiential Lab (Psych 211), Dept. of Psychology University of Michigan.
Data collection and analyses using fNIRS. fNIRS Lab at the Center for Human Growth and Development, University of Michigan.

Mentorship Experience

Undergraduate Research Assistants

- 2011-2012 Academic Year: 4 students
- 2012-2013 Academic Year: 10 students
- 2013-2014 Academic Year: 8 students
- 2014-2015 Academic Year: 10 students
- 2015-2016 Academic Year: 10 students
- 2016-2017 Academic Year: 10 students
- 2017-2018 Academic Year: 4 students

Aboriginal Undergraduate Research Mentorship Program at UBC, 2018 – 2019; 1 student

Undergraduate Research Opportunity Program (UROP), 2011 – 2017; 8 undergraduate students

Summer Research Opportunity Program (SROP) University of Michigan, 2012 – 2016; 3 undergraduate students

Coalition for Interdisciplinary Research on Latino/a Issues, 2013 – 2014; 1 undergraduate student

Michigan Association of Psychology Scholars, 2011 – 2012; 1 undergraduate student

PROFESSIONAL SERVICE

Journal Reviewing

- Child Development
- Developmental Science
- The Journal of Neuroscience
- Human Brain Mapping
- Developmental Neuropsychology
- Bilingualism: Language & Cognition
- International Journal of Bilingual Education and Bilingualism
- Bilingual Research Journal

- Questions and Answers in Linguistics

Conference Reviewing

- Society for functional Near-Infrared Spectroscopy (SfNIRS) 2016 Biennial meeting
- CogSci (Cognitive Science Society) 2017 meeting
- Cognitive Development Society (CDS) 2017 meeting

Departmental Service

- 2015-2016** Student Associate, Dept. of Psychology Executive Committee
Student member, Developmental Area Diversity Post-Doc Committee
- 2014-2015** Student member, Developmental Psychology Admissions Committee
Student member, Dept. of Psychology Student Academic Affairs Committee
- 2013** Panel member, Q &A Life in Grad School, Diversity Recruitment Weekend
- 2012-2014** Student member, Developmental Psychology Brown Bag Talks Committee
- 2012-2013** Student member, Diversity Panel in Psychology Committee
- 2012** Panel member, Q &A Life in Grad School, Diversity Recruitment Weekend
Panel member, Applying to Grad School, Diversity Recruitment Weekend

University Service

- 2015** Panel member, Q &A Life in Grad School, M-Sci Scholars at University of Michigan
- 2012** Panel member, Applying and Obtaining Competitive Prestigious Awards and Fellowships, AGEP University of Michigan
Panel member, NSF workshop for STEM disciplines, University of Michigan
Panel member, Graduate School: Research Experience & Application Process, Undergraduate Research Opportunity Program (UROP), University of Michigan

COMMUNITY OUTREACH

Community Presentations

Arredondo, M. M. (2016). Important steps for applying to college. Presentation in Spanish at ‘En Nuestra Lengua’ Spanish Saturday School, Ann Arbor, Michigan.

Arredondo, M. M. (2016). Children form an ethnic Latino identity: why is it important to speak Spanish? Presentation in Spanish at ‘En Nuestra Lengua’ Spanish Saturday School, Ann Arbor, Michigan.

Arredondo, M. M. (2015). The positive impact of bilingualism on attention. Presentation in Spanish at ‘En Nuestra Lengua’ Spanish Saturday School, Ann Arbor, Michigan.

Arredondo, M. M., & Kovelman, I. (2012). The bilingual child: Myths and reality about bilingual development. Ann Arbor Chinese Center of Michigan (ACCOM), Ann Arbor, Michigan.

Community Service

- 2018-present** Battered Women Supportive Services, Vancouver BC (Canada)
- 2011-2017** Volunteer Spanish language tester, “En Nuestra Lengua” Bach Elementary School

TEACHING AREAS/COURSES PREPARED TO TEACH

- Research methods (undergraduate, graduate)
 - Infant and early childhood development (undergraduate, graduate)
 - Cognitive development (undergraduate, graduate)
 - Language development (undergraduate, graduate)
 - Brain and behavior (undergraduate, graduate)
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PROFESSIONAL ASSOCIATIONS

- Society for Research in Child Development
 - Cognitive Development Society
 - International Congress for Infant Studies
 - Society of Functional Near-Infrared Spectroscopy
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LANGUAGE PROFICIENCY

Native in Spanish: speak, read, write.

High-Proficiency in English: speak, read, write.

REFERENCES

Janet Werker
University Killam Professor & Canada Research Chair
Department of Psychology
University of British Columbia
2136 West Mall
Vancouver, BC Canada V6T 1Z4
Email: jwerker@psych.ubc.ca

Ioulia Kovelman
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Department of Psychology
University of Michigan
2038 East Hall, 530 Church St.
Ann Arbor, MI 48109
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Susan A. Gelman
Heinz Werner Distinguished University Professor
Department of Psychology
University of Michigan
2040 East Hall, 530 Church St.

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Henry M. Wellman
Harold W. Stevenson Professor of Psychology
Department of Psychology
University of Michigan
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Ann Arbor, MI 48109
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Teresa Satterfield
Associate Professor
Department of Romance Languages and Literatures
4138 Modern Languages Building
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Phone: (734) 647 – 2332
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E. Margaret Evans
Associate Research Scientist
Center for Human Growth and Development
University of Michigan
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